

temperature of the probe is raised to a second, higher threshold temperature of between 100°C and 115°C such that a lesion is formed in the tissue adjacent the probe without the complete removal of electrolytes in the tissue adjacent to the probe through vaporization.

As has been previously argued, Stern discloses no such thing. As admitted in the Office Action, Stern does not teach the first equilibration temperature being between 90° and 105°C, and the final steady state temperature being between 100° and 115 °C. However, the Office Action goes on to allege that such would have been obvious to one of ordinary skill in the art to make such selections arguing that Stern discloses such. Applicant respectfully disagrees. Stern, as has been repeatedly pointed out during prosecution, teaches away from such a capability and there is absolutely no suggestion in Stern of an apparatus or a method that performs as claimed.

Firstly, Stern discloses a much lower temperature range as a first step that is between 45° and 50°C. Stern specifically states that this temperature is for thermal mapping (col. 10, lines 8-10). However, if this low temperature were used, for equilibration, then the equilibration affect would be completely lost by the time the probe is raised to the final claimed temperature, by Applicant, of between 100° and 115°C. With such, some parts of the probe would be considerably hotter than others. The hotter areas would risk charring and desiccating of tissue. To counter this then one would return to the Stern teaching by lowering the overall temperature of the probe which slows the lesion-generating process. That's why Stern teaches tissue ablation is within a range of 50°C-90°C and preferably around 70°C (col. 10, lines 9-11). As has been repeatedly pointed out, if power is applied to heat the tissue too quickly, according to Stern, the actual maximum tissue temperature in the region may exceed 100°C and lead to tissue desiccation (col. 11, lines 61-64).

However, in Applicant's invention, the final temperature range is between 100° and 115°C. This can be successfully used because the probe temperature has been equilibrated at a fairly high temperature, that is between 90° and 105°C that is just below the final temperature. As a result, the

subsequent small increase to the final temperature does not unduly affect the equilibration of the probe and the risk of tissue desiccation is reduced or eliminated. Thus, the higher final temperature can be safely employed with a consequent shorter treatment times.

In response to the Office Action allegation that discovering an optimum value involves only routine skill in the art, then one must ask why there is so much art that teaches explicitly to keep the final treatment temperature below 100°, the art including Stern. Applicant has disclosed a large number of references on page 2, lines 27 and 28 of the specification, that teach these lower ranges. Various ones of these references are discussed at the top of page 3.

Further, the other art of record in the application does not counter the references cited in Applicant's Background of Invention, rather it reinforces that teaching and that of Stern. All this additional art has been identified by Applicant.

For example, U.S. Patent No. 6,280,441 to Ryan talks about an apparatus and method for RF liaisoning which heats a probe from room temperature to 100°C. (col. 9, lines 32, 36) and points out that samples heated greater than 60°C have a decreased conductivity over time (col. 9, lines 48-67). Edwards et al., U.S. Patent No. 6,126,657, addresses a temperature of about 100°C (col. 11, line 10) but Fig. 6 shows temperatures in the range of 80-90°C. Ingle et al., U.S. Patent Publication No. 2001/0014819 indicates that the temperature of the target tissue will generally be raised to a value in the range from about 60°C-110°C often being in the range of about 60-80° (paragraph [0071]). Ryan et al., U.S. Patent No. 6,066,139, talks about regulating delivery of RF energy to a temperature range of about 95-105°C and controlling that temperature rise with maintenance of the temperature near the midpoint (col. 9, lines 5-17). Rittman, III, et al., U.S. Patent No. 6,451,015, talks about a two-dimensional display for a lesion generated but provides no temperatures. Stern et al., U.S. Patent No. 5,906,614, which is later than the applied Stern, talks about typically the temperature being set in the range of 50-90°C (col. 5, lines 54 and

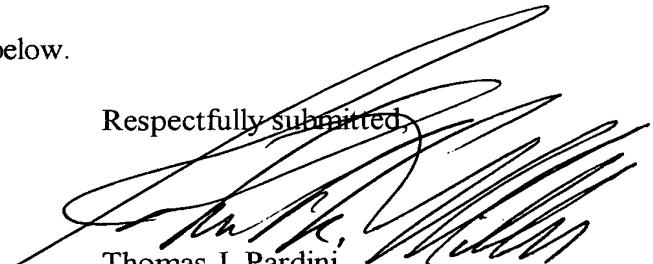
55). Further, Stern talks about a first value for thermal mapping is within 45-50°C whereas the second value for tissue ablation is within 50-90°C and preferably about 70°C (col. 9, lines 48-51). Thus, Stern '614 just reinforces the teaching of Stern '715. Lastly, Swanson et al., U.S. Patent No. 6,123,702 teaches soft tissue coagulation occurs at 50°C while over-heating occurs at a 100°C (col. 2, lines 28 and 29). Swanson goes on to state that a set point is believed to lie in the range of 40°-95°C with 70°C being a preferred representative value (col. 12, lines 29 and 30). This is reiterated in col. 14, lines 30-32.

Thus, to date, in the face of all of the prior art teachings that are of record in the application, there has been no showing of a two-step process having the ranges claimed by Applicant, nor has there been any real showing of an ablation temperature in the range Applicant claims, that is the second temperature range. The only basis for the rejection has been that such would be obvious to one of ordinary skill in the art at the time the invention was made. The art proves that such is not obvious or it would have been done. Thus, it is respectfully requested the rejection be withdrawn.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1, 3, 4, 6, 8-10 and 12 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

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